



Armed Forces College of Medicine AFCM



Pleura

Arterial Anastomosis of Lower Limb

Prof. Dr. Ahmed Samir

Ass. Prof of Anatomy

INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

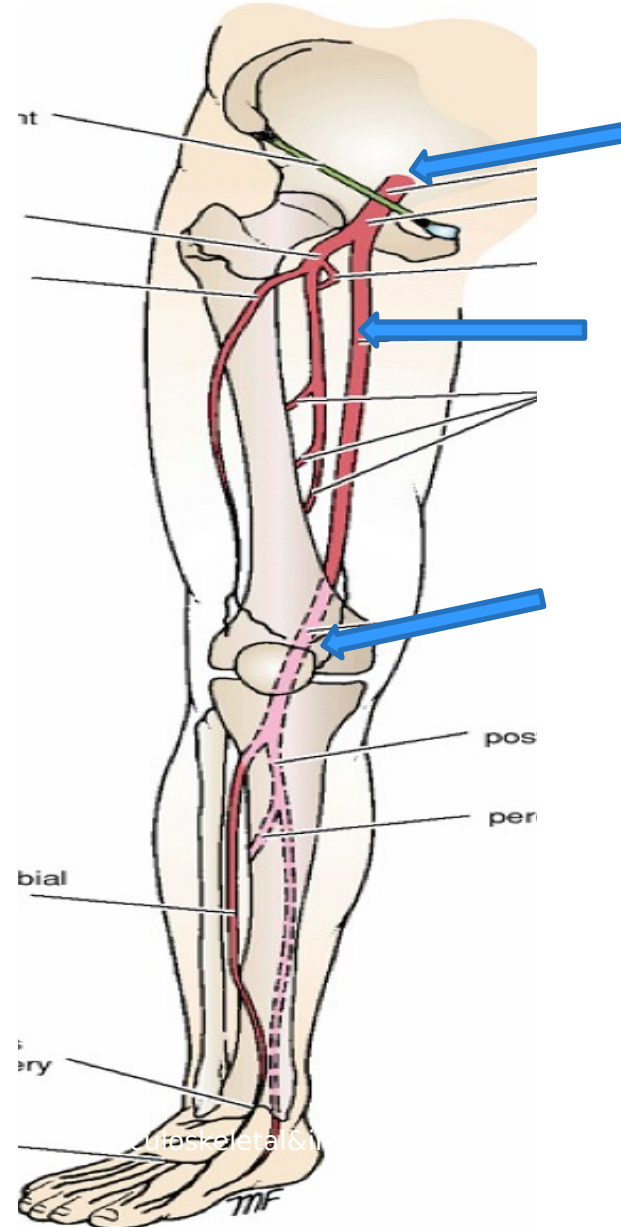
1. Discuss the arteries sharing in anastomosis around trochantric, cruciate, back of thigh, knee and ankle
2. Predict the clinical significance of anastomosis of lower limb.

Femoral Artery



Origin:

Continuation
of **external
iliac artery.**



□ Termination n:

enter the Back
of the knee
and will
continue as □
popliteal

Branches of Femoral artery



1) The superficial branches:

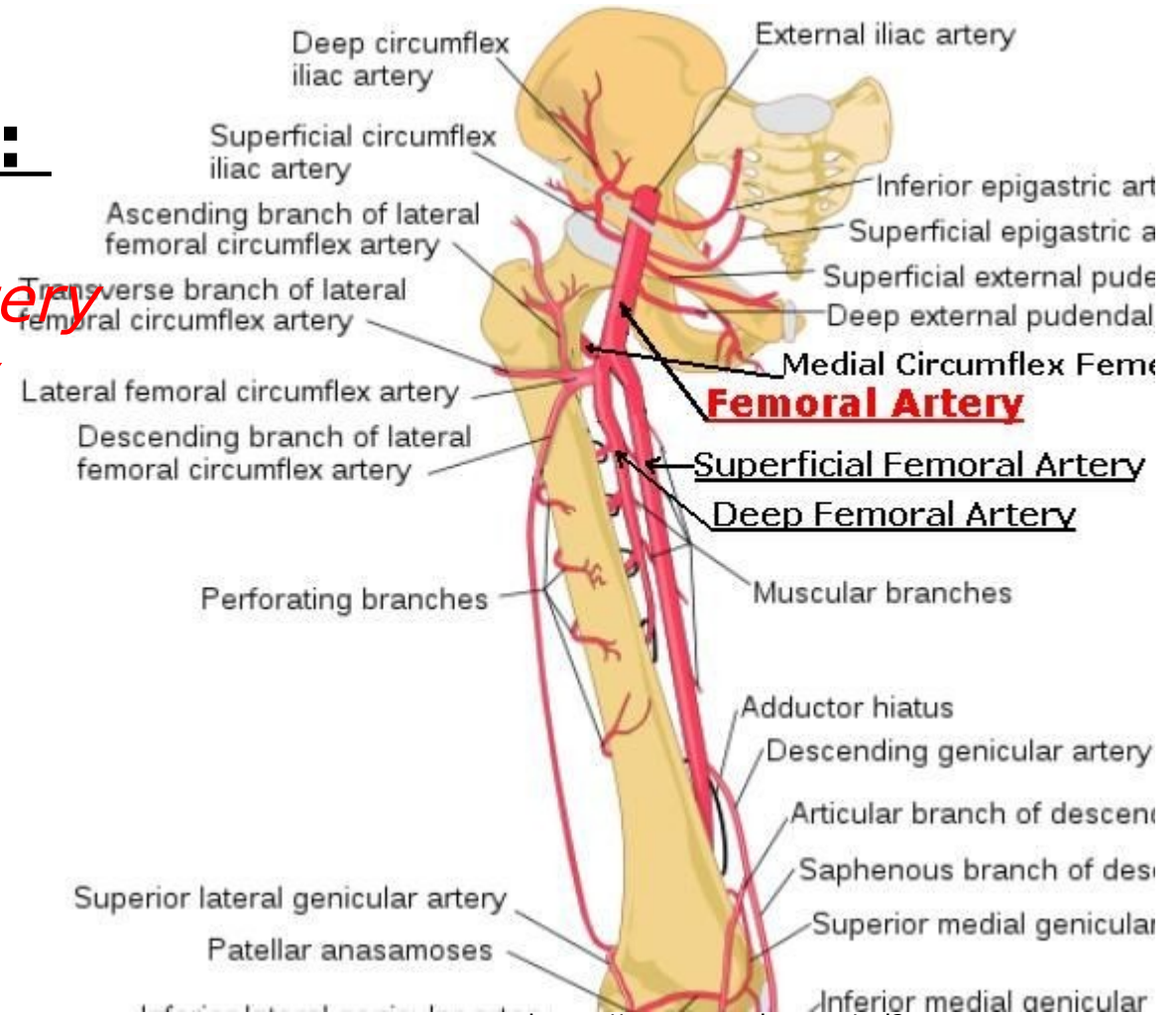
- a) Superficial epigastric artery*
- b) Superficial external pudendal artery*
- c) Superficial circumflex iliac artery*

2) The deep branches:

- a) Deep external pudendal*
- b) Descending genicular artery*
- c) Profunda femoris*

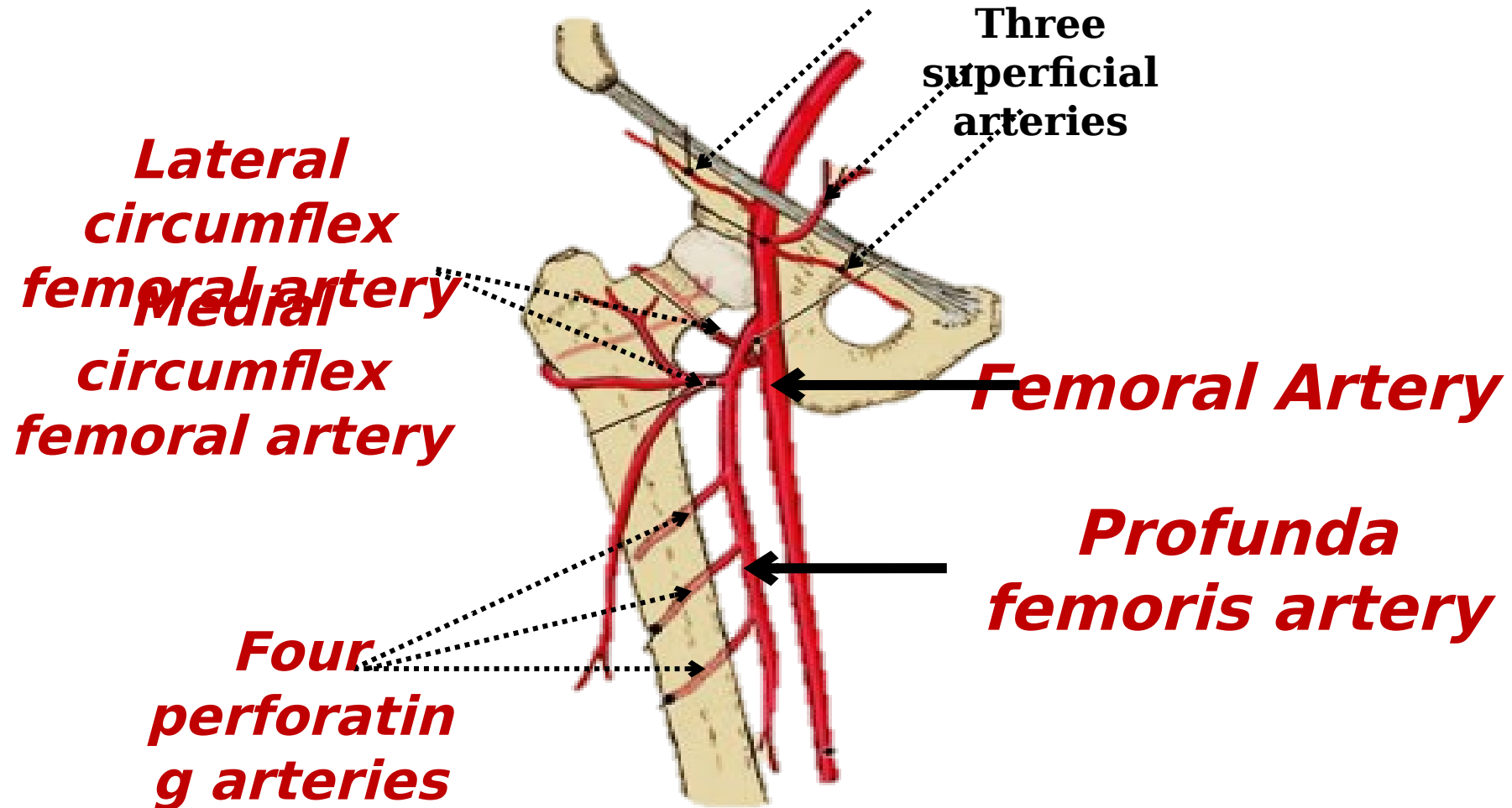
● It gives:

- *Medial & lateral circumflex femoral arteries.*
- *3 perforating arteries.*
- *It ends as 4th perforating artery.*



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Branches of Femoral artery

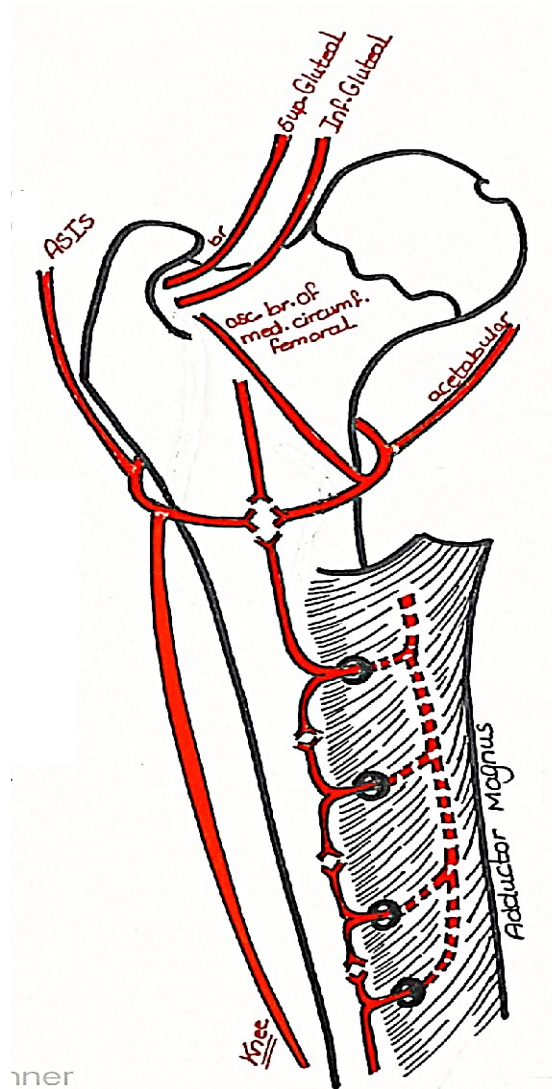


Lateral circumflex femoral

Ascending Br. ☐

ASIS #
Transverse Br. ☐

cruciate #
Descending Br. ☐ #
knee



Medial circumflex femoral

Ascending Br. ☐

trochanteric #
Transverse Br. ☐

cruciate #
Acetabular Br. ☐

acetabulum & ligament
of head of femur

Cruciate Anastomosis



- **Site:**

upper part of back of thigh

- **Formation:**

- *Vertical limb.**

1 . Desc. Br. of Inf glutea
(internal iliac)

2 . Asc. Br. of 1st perforat
(profunda fem)

- *Horizontal limb.**

1. Transverse br. of med femoral A.

2. Transverse br. of lat circumflex femoral A.
(profunda fem)

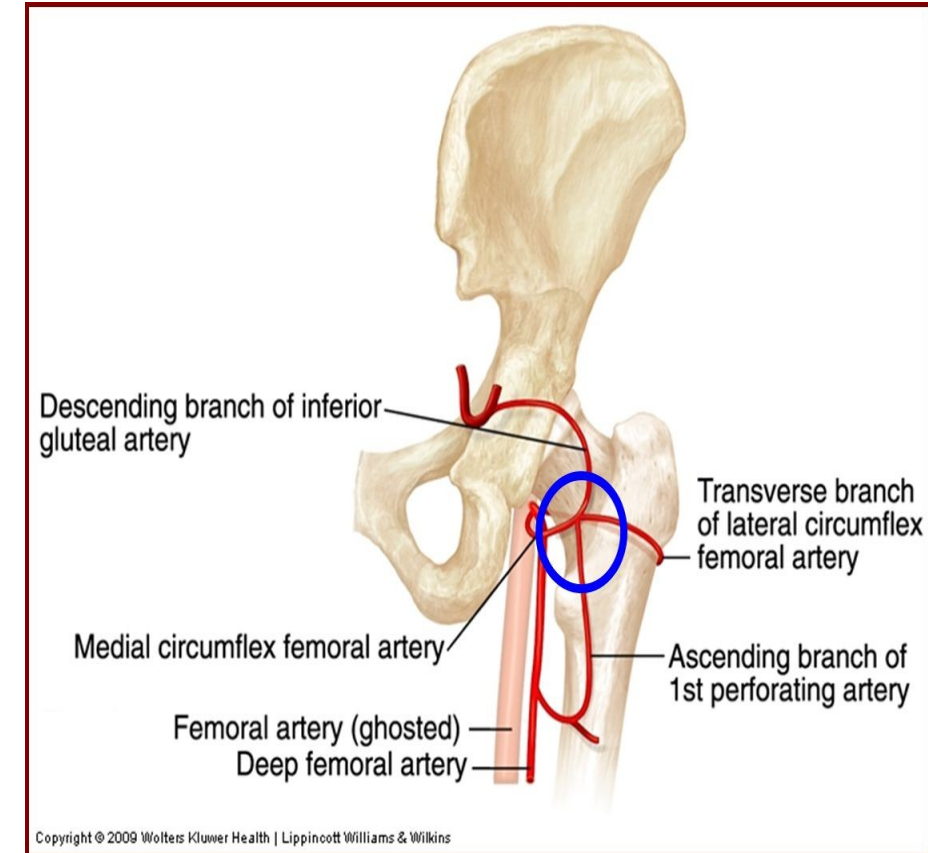
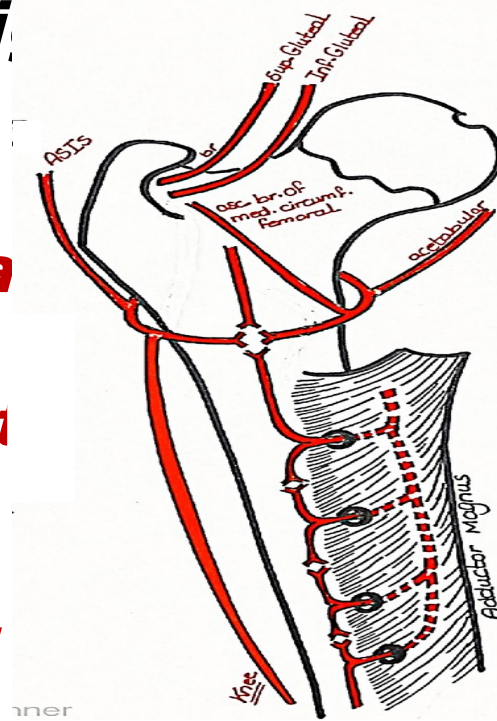
- **Clinical importance :**

Connect femoral with internal iliac

New Five Year Program

Musculoskeletal Module

Art.



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Trochantric Anastomosis



- **Site:**

In the trochanteric fossa

- **Formation:**

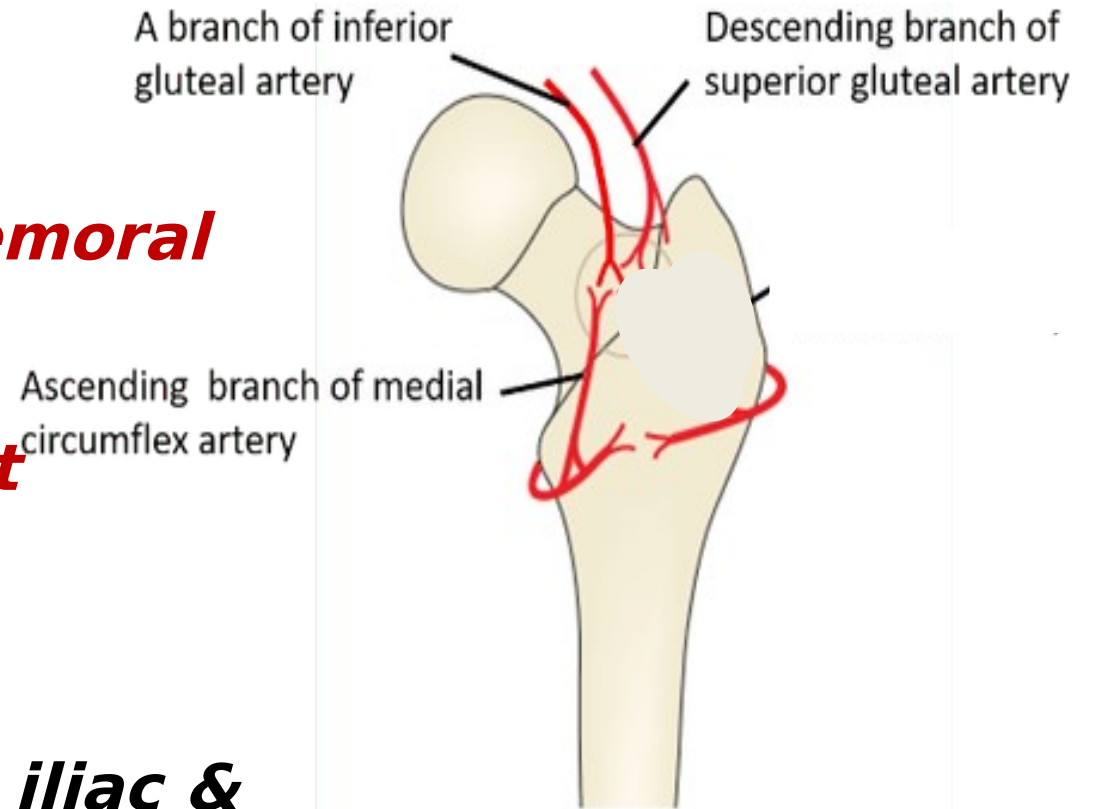
1 . Asc. Br. of med circumflex femoral art.

(profunda fem)

2 . Br. from Sup & Inf gluteal art
(internal iliac)

- **Clinical importance :**

Connect femoral with internal iliac & considered the **main blood supply of neck of femur**



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- **Site:**
Around ASIS

Iliac Anastomosis



- **Formation:**

- 1 . Superficial circumflex iliac art***

(femoral)

- 2 . Deep circumflex iliac art***
(external iliac)

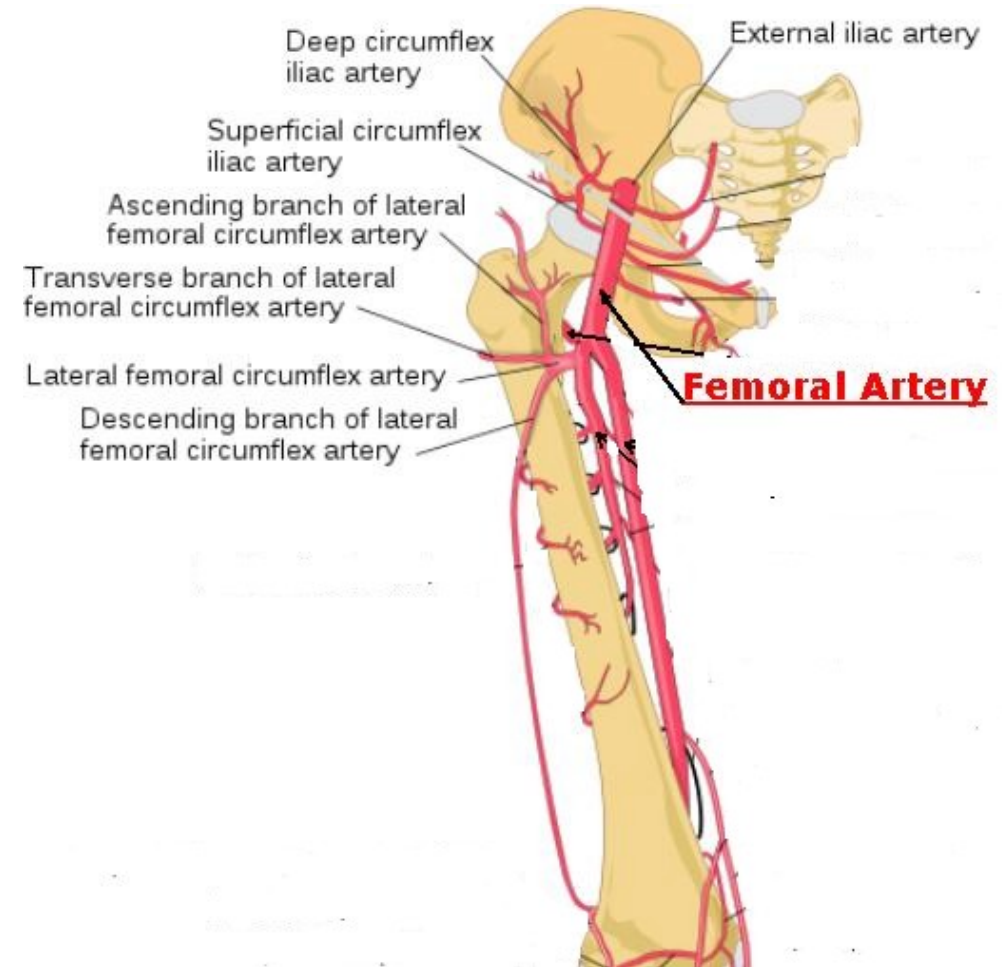
- 3 . Asc. Br. of lat circumflex femoral art.***

(profunda fem)

- 4. Sup gluteal art***

(Internal iliac)

- **Clinical importance:**
Connect external & internal iliac arteries



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Lecture Quiz



Question 1

Enumerate arteries share in cruciate anastomosis

Question 2

The main blood supply of neck of femur is

Popliteal artery



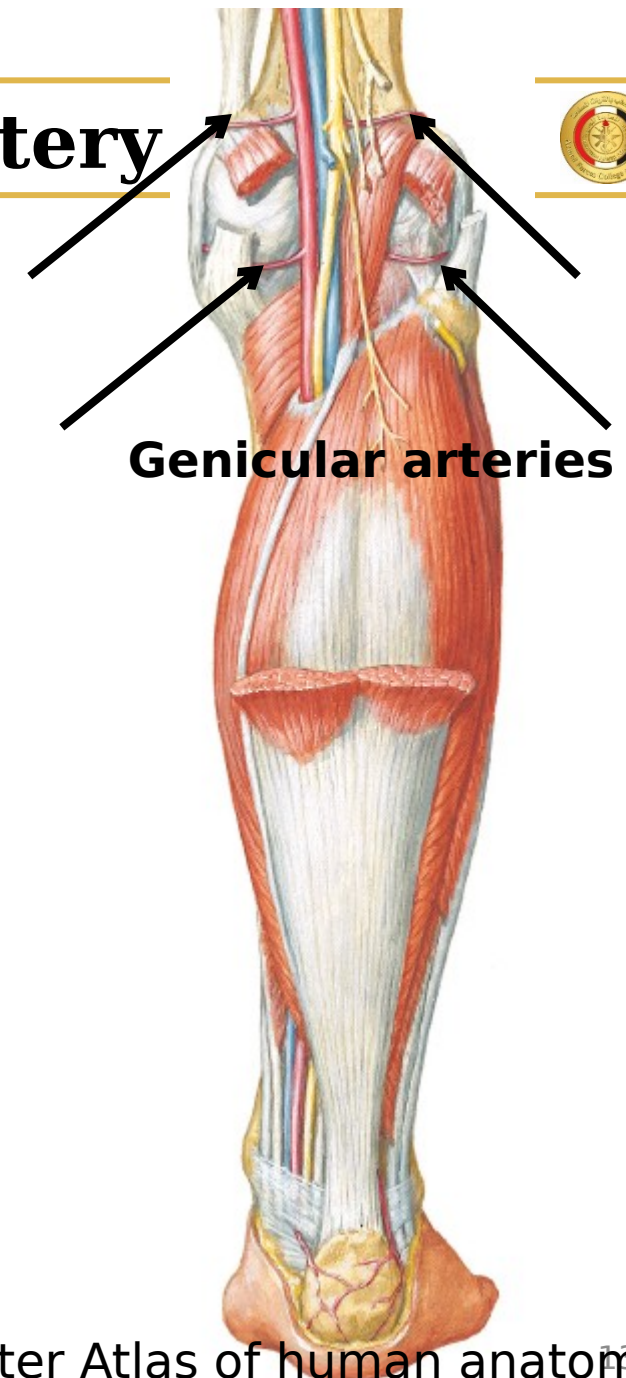
- ❖ **Begins as** continuation of femoral artery at opening in adductor magnus
- ❖ **Ends at** distal border of popliteus by dividing into anterior and posterior tibial arteries



Branches of popliteal artery



- 1. Muscular** (# with perforatings in chain #)
- 2. Cutaneous**
- 3. Articular (Genicular) br.:**
 - i. *Sup. Med. Genicular a.*
 - ii. *Inf. Med. Genicular a.*
 - iii. *Sup. Lat. Genicular a.*
 - iv. *Inf. Lat. Genicular a.*
 - v. *Middle genicular:* pierces the oblique popliteal ligament of the knee joint





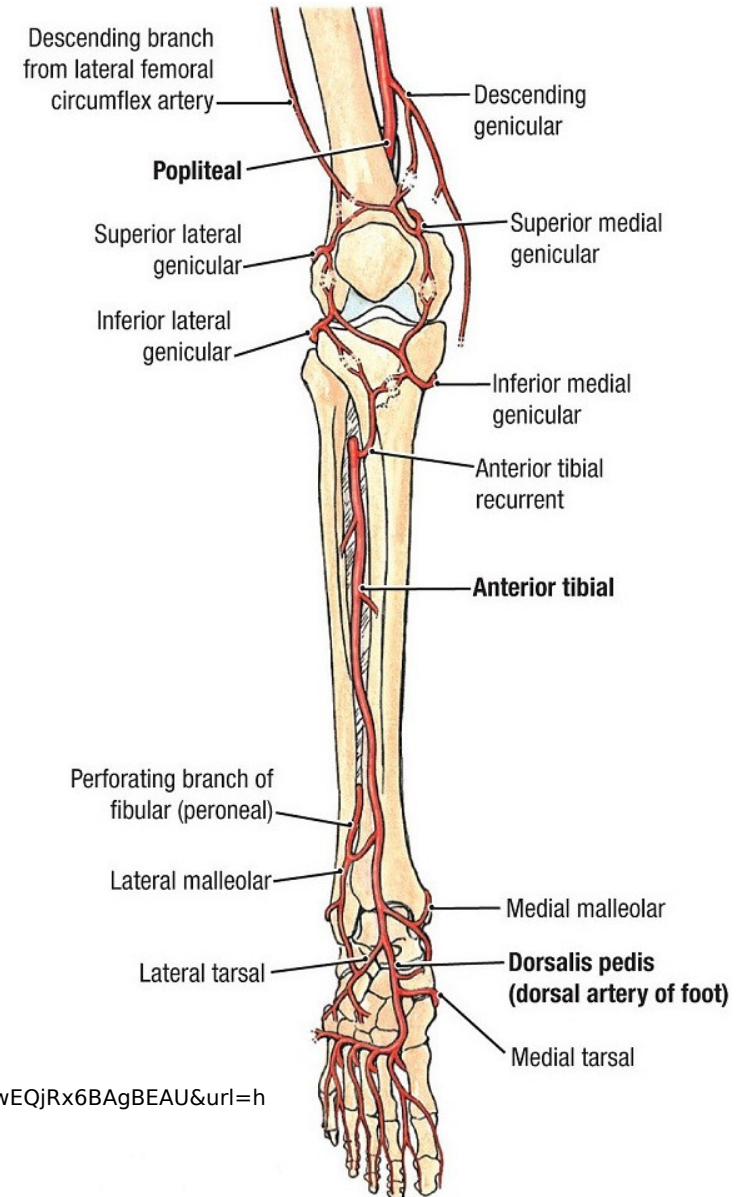
All of the following arteries share in the genicular anastomosis except:

- a) Popliteal artery
- b) Posterior tibial artery
- c) Femoral artery
- d) Profunda femoris artery

Anterior tibial artery



- ❑ **Begins as One of the 2 terminal brs. of the popliteal artery at distal border of popliteus**
- ❑ **Ends as *dorsalis pedis* artery by passing in front of the ankle joint between 2 malleoli**
- ❑ **passes through an *opening* in the interosseous membrane to reach the anterior compartment.**
- ❑ **In lower part of leg it lies between *extensor hallucis longus* and *extensor digitorum***



Branches of Anterior Tibial Artery



Branches

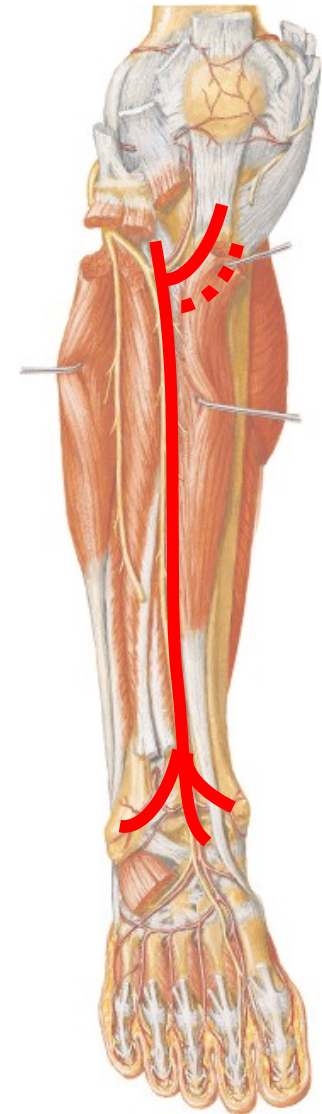
1. Anterior and posterior tibial recurrent arteries .

Share in anastomosis around knee

2. Muscular branches

3. Anterior medial and lateral malleolar arteries .

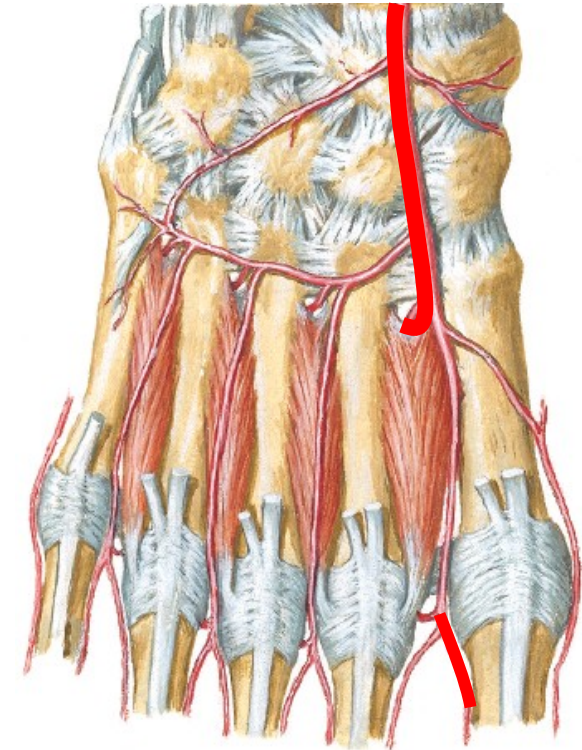
Share in anastomosis around ankle



Branches of Dorsalis Pedis Artery



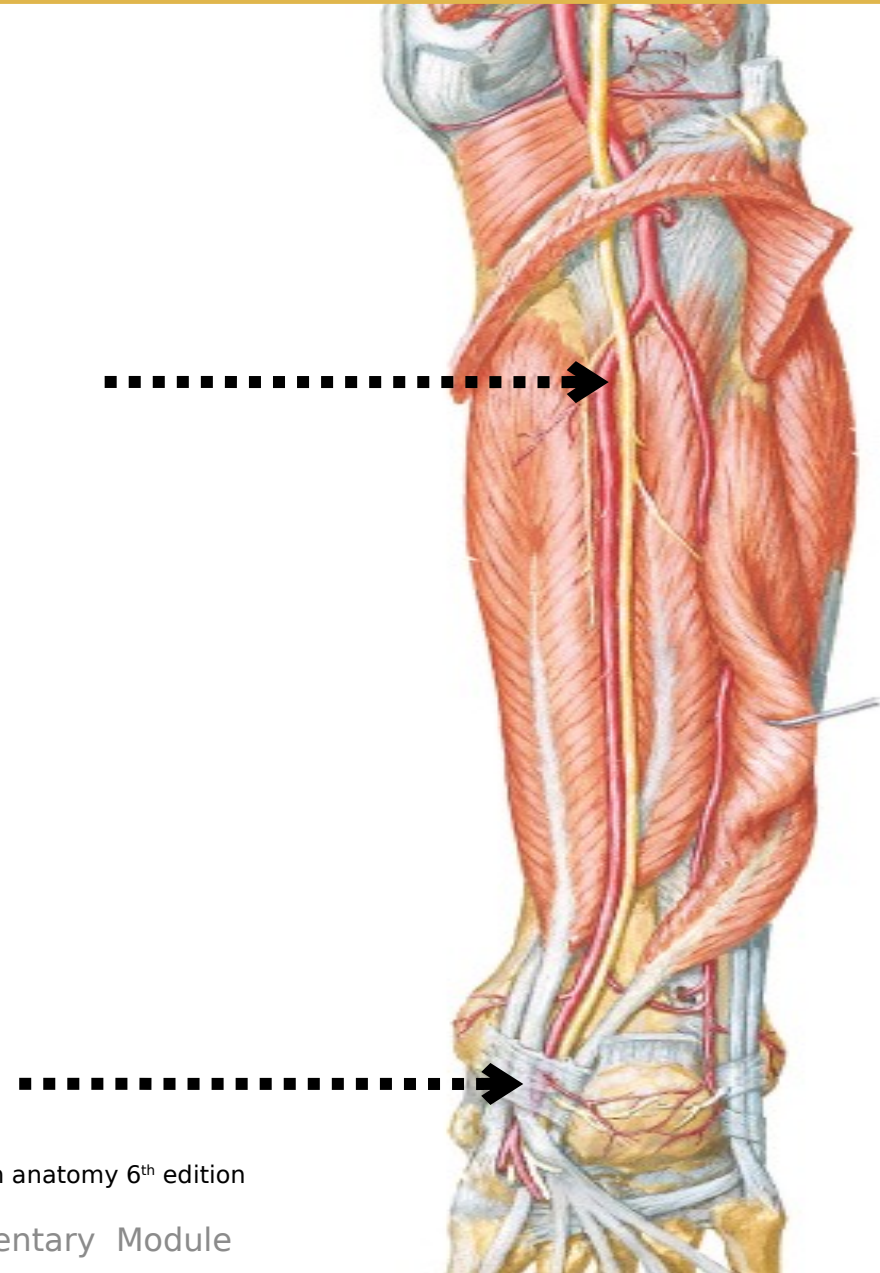
- 1. Lateral & medial tarsal arteries**
- 2. Arcuate a.: gives 2nd, 3rd & 4th metatarsal a.**
- 3. 1st dorsal metatarsal artery**



Posterior tibial artery



- ❖ *It is the larger of the two terminal branches of the **popliteal artery** .*
- ❖ *It passes under the soleus*
- ❖ *It ends deep the flexor retinaculum by dividing into **medial & lateral planter arteries**.*



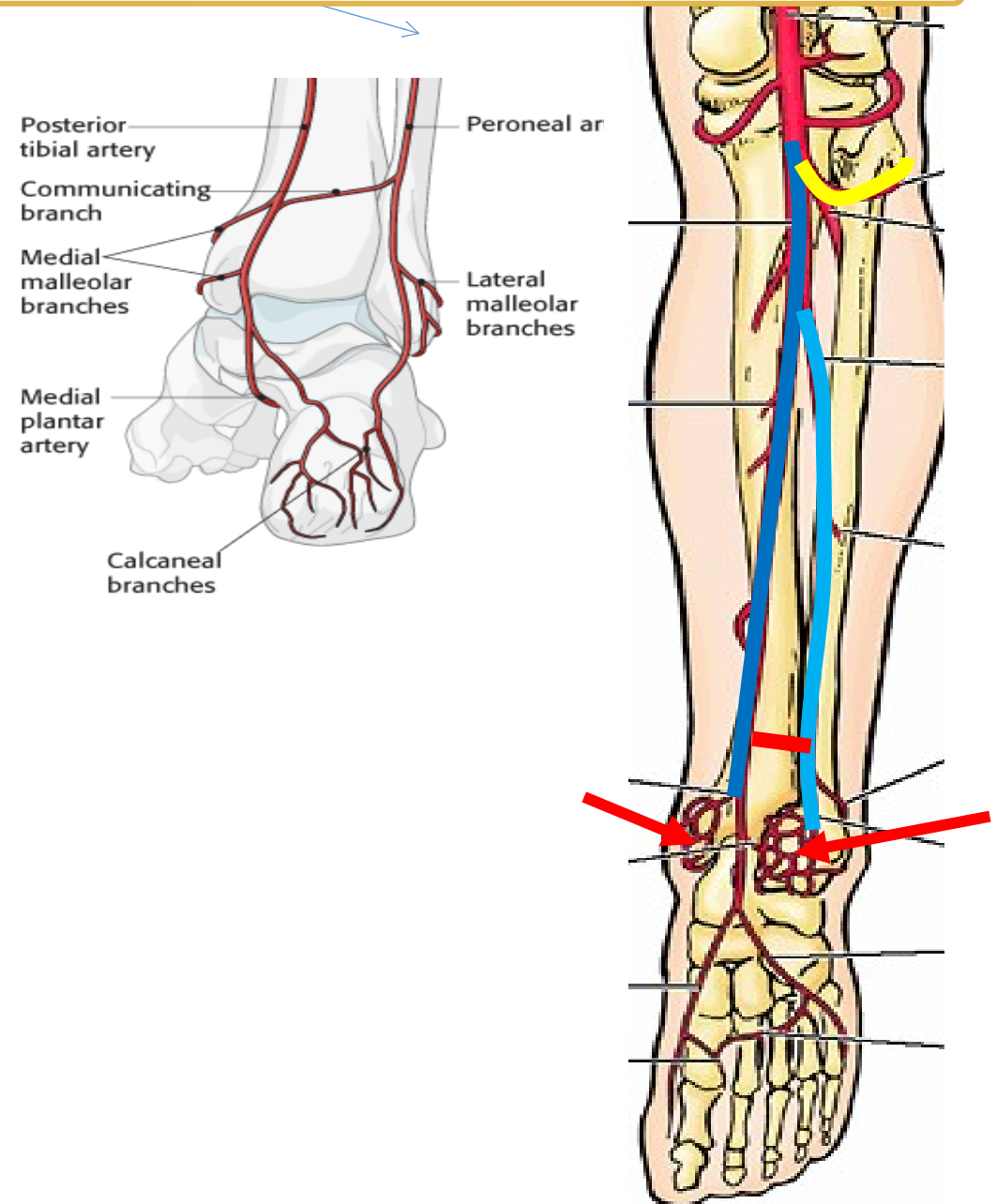
Netter Atlas of human anatomy 6th edition

Musculoskeletal & Integumentary Module

Branches of posterior Tibial vessels



1. **Peroneal artery:** Largest br., 1" below popliteus, descends along medial crest of fibula
 - i. Muscular.
 - ii. Nutrient: to fibula.
 - iii. Communicating: 2" above ankle.
 - iv. Perforating: 2" above ankle, # w lat. Malleolar, (**may replace dorsalis pedis artery**)
 - v. Calcanean: terminal br., # w lat. Malleolar
2. **Circumflex fibular:** # around knee.
3. **Muscular.**
4. **Nutrient:** to tibia
5. **Communicating:** 2" above ankle, joins that of peroneal a.
6. **Medial malleolar:** # around med. malleolus
7. **Calcanean:** # around med. malleolus



Genicular Anastomosis



- **Site:**

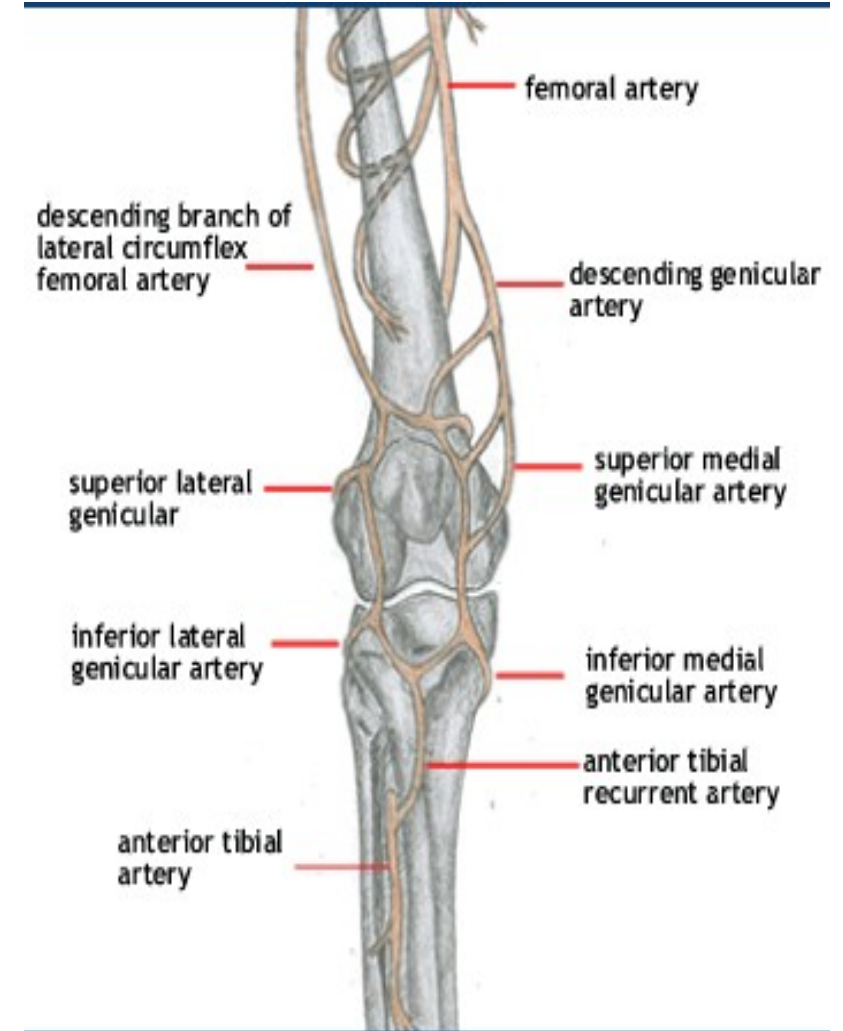
Around knee joint

- **Formation:**

- 1. Femoral A.: Descending genicular a.***
- 2. Profunda: Descending branch of lat. Circumflex femoral***
- 3. Popliteal A.: the 5 genicular arteries***
- 4. Anterior tibial A.: Ant. & Post. Tibial recurrent arteries***
- 5. Post. Tibial A.: Circumflex fibular***

Clinical importance:

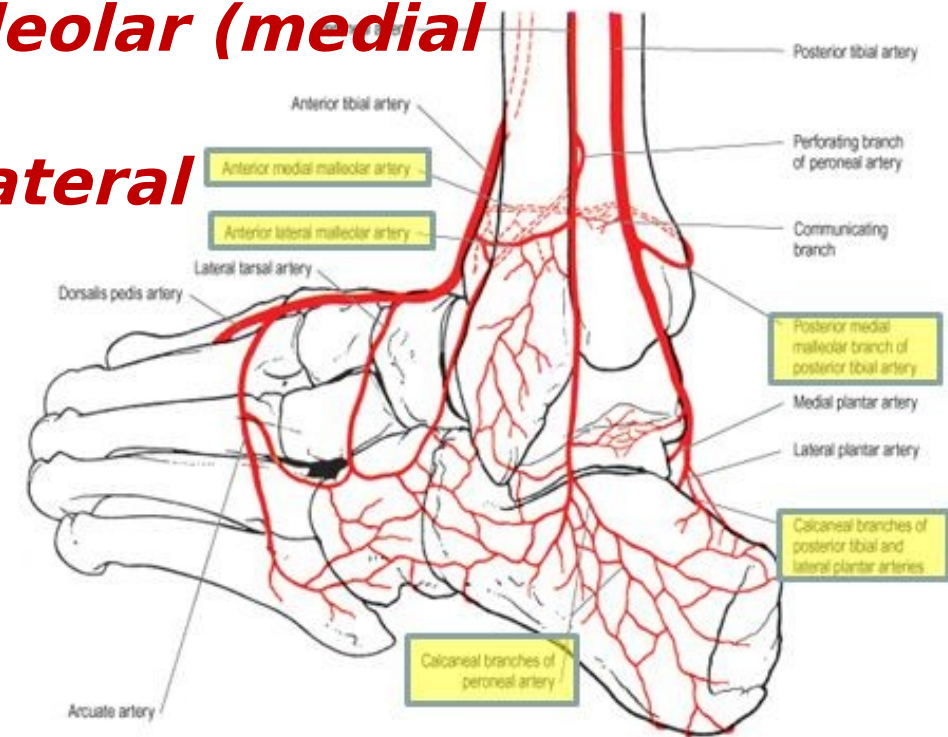
compensate for the narrowing of the popliteal artery which occurs during flexion of knee



Anastomosis around ankle



- 1. Ant. Tibial: Ant. Medial malleolar & ant. Lat. Malleolar arteries**
- 2. Dorsalis Pedis: Medial & lateral tarsal**
- 3. Post. Tibial A.: Calcaneal & medial malleolar (medial malleolus)**
- 4. Peroneal A.: Perforating & calcaneal (lateral malleolus)**



Arterial occlusive disease of the leg

- **Ischemia of the muscles**
- **a cramp-like pain with exercise.**

This condition is known as
intermittent

claudication.
If the arterial supply to the leg is occluded, gangrene will occur



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Thank you!

SUGGESTED TEXTBOOKS



1. Gray's Anatomy for Students-4th Edition

Atlas of human anatomy by Frank H. Netter, 6th Edition